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(54) Name of the invention:

Al Aerial Power Line

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(71) Patent Assignee: Furukawa Electric Co. Ltd.

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(54) Name of the invention

Al Aerial (Overhead) Power Line

(57) [Abstract]

[Goal]

The goal of the present invention is to suggest an Al aerial power line where even after the line stretching (uncoiling) and the line tightening construction it is possible to reliably discriminate the presence or absence of twisted wire.

[Structure]

In the case of this Al aerial power line 1, on one part of the front surface 1a along the longitudinal direction a sand blasting treatment has been conducted.

[Results]

By the brightness difference between the sand blast treated surface and the non-treated surface it is possible to observe the twisted wire state. This sand blast treated surface does not causes losses and because of that even if a long time has passed after the line stretching, line tightening operations, it is formed on the front surface of the electrical wire, and it is also possible to be observed and confirmed at the time of the conservation operations.

[Scope of the Claims]

[Claim 1]

Al aerial power line characterized by the fact that on one part of the front surface along the longitudinal direction sand blast treatment has been conducted.

[Claim 2]

Al aerial power line according to the Claim paragraph 1 where on the above-described sandblast treated surface, especially, a bohemite treatment or a low brightness treatment is conducted.

[Detailed Description of the Invention]

[0001]

[Technological Sphere of Application]

The present invention is an invention about an Al aerial power line, and especially in more details, the present invention is about an Al aerial power line where even after the passing of prolonged period of time after the completion of the line stretching and the line tightening construction, it is possible to assess the wire twisting state of its power line.

[0002]

[Previous Technology]

When during the line stretching operations and the line tightening operations of the Al aerial power line its power line is rotated and the wire is twisted the problems is generated that because of the change of the electrical wire apportioned stress etc., there is a decrease of the strength of the power line and a shortening of the working life span, etc. Also, for example, in the case when as a counter measure for the trouble causing lightening a twist eliminating weight is provided, and if by its galloping etc., vibrations, power line is twisted, the same way, the strength of the power line is decreased and the working life span is shortened.

[0003]

Because of that, after the completion of the line stretching and the line twisting operations of the power line, and during the conservation operation, the presence or absence of a wire twist in the aerial power line is assessed, and in the case when the wire is twisted an operation in order to restore its correct state becomes necessary. In the past, in order to assess the twisted wire state of the aerial power lines, for example, in the case when the wire stretching operation is conducted through the pull out method, one side of the front surface of the power line is colored along the wire stretching direction by coating a colorant etc., coloring material. If during the wire stretching the power line is rotated, the colorant material coated stripe is detected as a spiral state and by that it is possible to reliably confirm the presence or absence of a wire twist.

[0004]

[Problems Solved by the Present Invention]

Regarding the above-described countermeasure, it is a simple method as a method to confirm the wire twist state of aerial power lines. However, the colorant material that is coated on one surface of the power line has poor weather resistance properties and there are many cases where several months after the coating it is separated and peeled off of the surface of the power line. Consequently, in the case of the above described countermeasure it can only be used during the line stretching and the line tightening construction and it is not effective for the conservation operations that occur after the completion of the construction.

[0005]

The present invention has as a goal to solve the above described problems and to suggest an Al aerial power line whereby it is possible to assess the state of the wire twisting during the conservation procedures after the construction and naturally also during the wire stretching and the wire tightening operations.

[0006]

[Measures in Order to Solve the Problems]

In order to achieve the above described goals, according to the present invention an Al aerial power line is suggested that is characterized by the fact that on one part of the surface, along the longitudinal direction, a sand blasting treatment is conducted.

[0007]

[Effect]

The surface where a sand blasting treatment has been conducted becomes a surface that has protrusions and indentations and it is not a glossy surface. Because of that, it is possible to discriminate the sand blasting treated surface and the non-sand blasting treated surface. Consequently, during the wire stretching and the wire tightening construction it is possible to easily observe and confirm the presence or absence or wire twisting of the power line. Also, the working life span of the sand blasting treated surface is the same as the use working life span of its power line, and because of that even after the completion of the construction, in the case limited to power lines that are overhead, the presence or absence of wire twisting continues to be indicated, and because of that the conservation operations become easy.

[0008]

[Practical Examples]

Here below the practical implementation example according to the present invention will be explained based on the appended diagram. Figure 1 represents a side view diagram of an aerial power line example according to the present invention. According to the figure, on one side of the surface of the power line 1, along the longitudinal direction of the power line 1, the sandblast treated surface 1a is formed. The sandblast treated surface 1a has protrusions and indentations and it is not a glossy surface. Consequently, there is a difference in the gloss of the high brightness, glossy surface, non-treated surface 1b and the sand blast treated surface 1a, and this is observed as a clear brightness difference, and by that it is possible to easily discriminate both surfaces.

[0009]

Relative to the span (width) of this sand blast treated surface 1a there are no particular regulations, and it is a good option as long as it allows for the discrimination of the non-treated surface 1b. As a rule, it is appropriate if it is at a level where it is half of the surface of the aerial power line 1. Also, if on this sand blast treated surface 1a, especially, a brightness lowering treatment is conducted, such as a bohemite treatment is conducted, or if after the sand blasting treatment it is treated as it is immersed in 90oC pure water (deionized water), it is preferred, because the discrimination relative to the non-treated surface 1b, becomes even more clear.

[0010]

An example when this aerial power line has a twisted state is shown in Figure 2. As it is clear from Figure 2, if the aerial power line has a twisted wire, the sand blast treated surface 1 a also follows the wire twisted state of the aerial power line, and the spiral shape pattern of the sand blasted surface 1a is observed, and because of that it is possible to discriminate whether or not the aerial power line has a twisted wire.

[0011]

[Results From the Present Invention]

As it is clear from the above described explanation, the Al aerial power line according to the present invention allows for the clear discrimination of the brightness difference of the sand blast treated and the non-sand blast treated surface, and because of that it is possible to easily discriminate the presence or absence of wire twisting in the power line. Not only that, but also, because of the fact that this sand blast treated surface has the same working life span as that of the aerial power line, naturally it is not lost during the wire stretching construction and the wire tightening construction, but also it is not lost after the construction. Consequently, even in the conservation operations it is possible to reliably discriminate the presence or the absence of wire twisting.

[Brief Explanation of the Figures]

[Figure 1]

Figure 1 represents a side view diagram showing an example of the Al aerial power line according to the present invention.

[Figure 2]

Figure 2 is a side view diagram showing the twisted wire state of the Al aerial power line according to the present invention.

[Explanation of the Symbols]

1.....Al aerial power line
1a.....sand blast treated surface
1b.....non-sand blast treated surface

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1b　サンドブラスト非処理面

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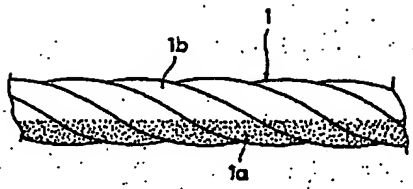
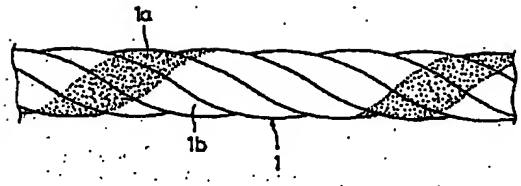
【図1】



【図2】



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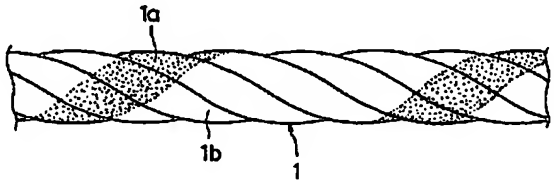
(54)【発明の名称】　Ａ1架空電線

(57)【要約】

【目的】　延線，緊線工事後であっても捻線の有無を確実に識別することができるＡ1架空電線を提供する。

【構成】　このＡ1架空電線1は、表面の一部1ａには長手方向沿ってサンドブラスト処理が施されている。

【効果】　サンドブラスト処理面と非処理面の明度差で捻線状態が視認できる。このサンドブラスト処理面は消失しないので、延線，緊線工事後であっても長期に亘って電線表面に形成されていて、保守作業時にも視認できる。



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【特許請求の範囲】

【請求項1】　表面の一部には長手方向に沿ってサンドブラスト処理が施されていることを特徴とするA1架空電線。

【請求項2】　前記サンドブラスト処理面の上には、更にベーマイト処理または低明度処理が施されている請求項1のA1架空電線。

【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明はA1架空電線に関し、更に詳しくは、延線および緊線の工事終了後、長期間の経過した後であってもその電線の捻線状態を判別することができるA1架空電線に関する。

【0002】

【従来の技術】A1架空電線の延線工事や緊線工事の過程で、その電線が回転して捻線すると、電線の分担張力などが変化することにより、電線強度の低下や寿命の短縮などの問題が発生する。また、例えば難着雪対策のために捻れ防止ウエイトを装着した場合、そのギャロッピングなどの振動によって電線が捻線すると、同じく電線強度の低下、寿命の短縮化が引き起こされる。

【0003】このため、電線の延線および緊線工事の終了後や保守作業においては、架空電線の捻線の有無を判別し、捻線している場合にはそれを正常な状態に復するための作業が必要になる。従来、架空電線の捻線状態を判別するために、例えば引抜工法による延線工事の場合は、電線の表面の片側に延線方向に沿ってペンキなどの着色材を塗布することが行なわれている。延線中に電線が回転すると、着色材の塗布帯がスパイラル状に視認されるので、捻線の有無を確認することができるからである。

【0004】

【発明が解決しようとする課題】上記した対策は、A1架空電線の捻線状態を確認する方法としては簡便である。しかしながら、電線の片面に塗布するペンキなどの着色材は耐候性が良好ではなく、塗布後わずか数ヶ月後に電線表面から剥落してしまうことが多い。したがって、上記した対策は、延線と緊線の工事の過程で適用できるのみで、工事終了後における保守作業にとっては有効といえない。

【0005】本発明は上記した問題を解決し、延線，緊線の工事中は勿論のこと、工事後の保守作業にとっても、電線の捻線状態を判別することができるA1架空電線の提供を目的とする。

【0006】

【課題を解決するための手段】上記した目的を達成するために、本発明においては、表面の一部には長手方向に沿ってサンドブラスト処理が施されていることを特徴とするA1架空電線が提供される。

【0007】

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【作用】サンドブラスト処理が施されている表面は凹凸面になっていて光沢面ではない。そのため、サンドブラスト処理面と非処理面とを識別することができる。したがって、延線や緊線工事過程で、電線の捻線の有無は容易に視認される。また、サンドブラスト処理面の寿命は、その電線の使用寿命と同等であるので、工事終了後であっても、電線が架線されている限り、その捻線の有無は示し続けられ、保守作業は容易になる。

【0008】

【実施例】以下に、本発明の実施例を添付図面に基づいて説明する。図1は本発明の架空電線例を示す側面図である。図において、電線1の表面の片側には、電線1の長手方向に沿ってサンドブラスト処理面1aが形成されている。サンドブラスト処理面1aは凹凸面であり非光沢面である。したがって、明度が高く光沢面である非処理面1bとサンドブラスト処理面1aとは光沢の違い、明度の違いが歴然として視認されるので、両面は容易に識別可能である。

【0009】このサンドブラスト処理面1aの広さは格別限定されるものではなく、非処理面1bと識別できるような広さであればよい。概ね、架空電線1の表面の半分程度であることが好適である。また、このサンドブラスト処理面1aに、更に、ベーマイト処理を施したり、または、サンドブラスト処理後に約90℃の純水（イオン交換水）に浸漬して処理するような低明度処理を施すと、非処理面1bとの識別を一層クリアーに行なうことができて好適である。

【0010】この架空電線が捻線状態にある場合の例を図2に示す。図2から明らかなように、架空電線が捻線すると、サンドブラスト処理面1aも架空電線の捻線状態に追随してツイストし、サンドブラスト処理面1aのスパイラル状の模様が視認されるので、架空電線が捻線しているか否かは明瞭に識別できる。

【0011】

【発明の効果】以上の説明で明らかなように、本発明のA1架空電線は、サンドブラスト処理面と非処理面との明度差が明瞭に視認できるので、電線の捻線有無を容易に識別することができる。しかも、このサンドブラスト処理面は架空電線の寿命と同等の寿命をもっているので、延線，緊線の工事中は勿論のこと、工事後においても消失することがない。したがって、保守作業においても捻線の有無を確実に識別することができる。

【図面の簡単な説明】

【図1】本発明のA1架空電線の例を示す側面図である。

【図2】本発明のA1架空電線が捻線した状態を示す側面図である。

【符号の説明】

1　A1架空電線

1a　サンドブラスト処理面

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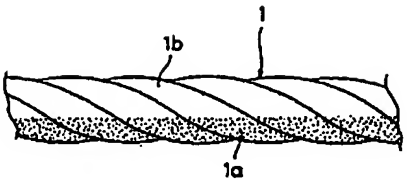
1b　サンドブラスト非処理面

【図1】



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【図2】